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EXAMINER	
THANGAVELU, KANDASAMY	
ART UNIT	**PAPER NUMBER**
2123	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/18/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/684,262	MORITA ET AL.	
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Applicants' Response mailed on October 19, 2006. Claims 1, 2 and 4-8 were amended. Claims 10-25 were added. Claims 1-25 of the application are pending. This office action is made non-final.

Claim Objections

2. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

> The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

3. Claims 5, 7, 14 and 21 are objected to because of the following informalities:

Claim 5, Lines 9-11, "wherein when it is judged in the judging step that the oscillation in the final gear is within the acceptable range when at least one of the oscillation frequency and the oscillation amplitude determined in the equation analyzing step fall within the acceptable range" appears to be incorrect and it appears that it should be "wherein it is judged in the judging step that the oscillation in the final gear is within the acceptable range when at least one of the oscillation frequency and the oscillation amplitude determined in the equation analyzing step falls within the acceptable range".

Claim 7, Lines 17-18, "outputting the one or more gear characteristic values corresponding to the simulated oscillation be judged as optimum gear characteristic values" appears to be incorrect and it appears that it should be "outputting the one or more gear characteristic values corresponding to the simulated oscillation being judged as optimum gear characteristic values".

Claim 14, Line 2, "said simulating an oscillation includes instructions and criteria" appears to be incorrect and it appears that it should be "said program includes instructions and criteria".

Claim 14, Lines 8-10, "when at least one of the oscillation frequency and the oscillation amplitude determined by the equation analyzing section fall within the acceptable range" appears to be incorrect and it appears that it should be "when at least one of the oscillation frequency and the oscillation amplitude determined by the equation analyzing section falls within the acceptable range".

Claim 21, Lines 11-12, "wherein said setting changing, simulating and judging is repeated" appears to be incorrect and it appears that it should be "wherein said setting changing, simulating and judging are repeated".

Claim 21, Lines 13-14, "outputting the one or more gear characteristic values corresponding to the simulated oscillation be judged as optimum gear characteristic values" appears to be incorrect and it appears that it should be "outputting the one or

more gear characteristic values corresponding to the simulated oscillation being judged as optimum gear characteristic values".

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 13-15 and 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13, Lines 5-6 state " simulating an oscillation in a final gear of the gear driving system, based on the one or more gear characteristic value set in the setting section ". There is insufficient antecedent basis for "the setting section " in the claim.

Claim 13, Lines 9-10 state " changing any one or more of the one or more gear characteristic values previously set in the setting section, when the judging section ". There is insufficient antecedent basis for "the setting section " and "the judging section " in the claim.

Claim 14, Lines 9-10 state " when at least one of the oscillation frequency and the oscillation amplitude determined by the equation analyzing section fall ". There is insufficient antecedent basis for "the equation analyzing section " in the claim.

Claim 18, Line 4 states " determined by the equation analyzing step to be outside the acceptable range ". There is insufficient antecedent basis for "the equation analyzing step " in the claim.

Claim 19, Lines 3-4 state " determined by the equation analyzing step to be outside the acceptable range ". There is insufficient antecedent basis for "the equation analyzing step " in the claim.

Claim 20, Lines 4-5 state " determined by the equation analyzing section to be outside the acceptable range ". There is insufficient antecedent basis for "the equation analyzing section " in the claim.

Claims rejected but not specifically addressed are rejected based on their dependency on rejected claims.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-25 are rejected under 35 U.S.C. 101 because the claimed inventions are directed to non-statutory subject matter.

7.1 Claim 1 states in the preamble, "A system for designing a gear driving system". However, the system comprises only the elements of a setting section, a calculating section, a judging section and a setting changing section. The system comprising only elements that can be implemented with paper and pencil is not patentable under 35 USC 101. To be patentable, the system should be implemented in a computer and should include hardware elements incorporating the software elements.

Claim 1 does not produce any useful, tangible and concrete result and therefore lacks practical application, since it only sets characteristic values of the final and driving gears.

Claims 2 and 3 depend on claim 1, but do not produce any useful, tangible and concrete result and therefore lack practical application.

Therefore, claims 1-3 are not patentable under 35 USC 101.

7.2 Claim 4 states in the preamble, "A program for causing a computer to perform". The claim does not state the purpose and use of the claim. (Claim 1 states the use of the claim as, "A system for designing a gear driving system".). A claim without any stated use and its associated dependent claims are not patentable under 35 USC 101.

Claim 4 and its dependent claims claim "A program for causing a computer to perform" some steps. A computer program per se is not patentable under 35 USC 101. However, a

computer program **on a computer readable medium, which when executed on a computer performs a process** comprising several steps is patentable.

Claim 4 does not produce any useful, tangible and concrete result and therefore lacks practical application, since it only sets characteristic values of the final and driving gears.

Claims 5 and 6 depend on claim 4, but do not produce any useful, tangible and concrete result and therefore lack practical application.

Therefore, claims 4-6 are not patentable under 35 USC 101.

7.3 Claim 7 states in the preamble, "A method for designing a gear driving system". However, the method comprises only a setting step, a calculating step, a judging step and a setting changing step. The method comprising only step that can be implemented with paper and pencil is not patentable under 35 USC 101. To be patentable, the method should be implemented in a computer.

Claim 7 does not produce any useful, tangible and concrete result and therefore lacks practical application, since it only sets characteristic values of the final and driving gears and outputs them on a paper.

Claims 8 and 9 depend on claim 7, but do not produce any useful, tangible and concrete result and therefore lack practical application.

Therefore, claims 7-9 are not patentable under 35 USC 101.

7.4 Claims 10-12 depend on claim 1 but do not produce any useful, tangible and concrete result and therefore lack practical application, since they only set characteristic values of the final and driving gears and output them on a paper. Therefore, claims 10-12 are not patentable under 35 USC 101.

7.5 Claim 13 states in the preamble, "A program that is stored in one of a static storage medium, a dynamic storage medium or a storage area of a computer system, the program including instructions and criteria for" and lists the steps of setting, simulating, judging and changing the characteristic values. The claim does not state the purpose and use of the claim. (Claim 1 states the use of the claim as, "A system for designing a gear driving system".). A claim without any stated use and its associated dependent claims are not patentable under 35 USC 101.

Claim 13 and its dependent claims claim "A program that is stored in one of a static storage medium, a dynamic storage medium or a storage area of a computer system". A computer program per se is not patentable under 35 USC 101. However, a computer program **on a computer readable medium, which when executed on a computer performs a process** comprising several steps is patentable.

Claim 13 does not produce any useful, tangible and concrete result and therefore lacks practical application, since it only sets characteristic values of the final and driving gears.

Claims 14-17 depend on claim 13, but do not produce any useful, tangible and concrete result and therefore lack practical application.

Therefore, claims 13-17 are not patentable under 35 USC 101.

7.6 claims 18-20 depend on claims 1, 7 and 13. The do not produce any useful, tangible and concrete result and therefore lack practical application. Therefore, claims 18-20 are not patentable under 35 USC 101.

7.7 Claim 21 states in the preamble, "A program for designing a gear driving system in combination with a computer, said program for execution on the computer and comprising instructions and criteria for". This program could be residing on a paper.

Claim 21 claims "A program for designing a gear driving system in combination with a computer, said program for execution on the computer" and has instructions for some steps. A computer program per se is not patentable under 35 USC 101. However, a computer program **on a computer readable medium or implemented on a computer memory, which when executed on a computer performs a process** comprising several steps is patentable.

Claim 21 does not produce any useful, tangible and concrete result and therefore lacks practical application, since it only sets characteristic values of the final and driving gears and outputs the values on a paper. Therefore, claim 21 is not patentable under 35 USC 101.

7.8 Claims 22-24 do not produce any useful, tangible and concrete result and therefore lack practical application, since they only list characteristic values of the final and driving gears. Therefore, claims 22-24 are not patentable under 35 USC 101.

7.9 Claim 25 claims "A computer-readable recording medium for storing the program as set forth in claim 4". A computer-readable recording medium for storing the program per se is not patentable. However, a computer program **on a computer readable medium which when executed on a computer performs a process** comprising several steps is patentable.

Claim 4 states in the preamble, "A program for causing a computer to perform". The claim does not state the purpose and use of the claim. (Claim 1 states the use of the claim as, "A system for designing a gear driving system".). Therefore, claim 25 does not have stated purpose or use. A claim without any stated use and its associated dependent claims are not patentable under 35 USC 101.

Claim 4 does not produce any useful, tangible and concrete result and therefore lacks practical application, since it only sets characteristic values of the final and driving gears. Claim 25 also does not produce any useful, tangible and concrete result and therefore lacks practical application. Therefore, claim 25 is not patentable under 35 USC 101.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1, 4, 7, 10-13, 16, 17 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sumida** (U.S. Patent Application 2003/0115037) in view of **Koide** (U.S. Patent Application 2002/0085086), and further in view of **Hsi Lin et al.** ("A parametric study of spur gear dynamics", The University of Memphis, January 1998).

10.1 **Sumida** teaches simulation model creation method and system and storage medium. Specifically, as per claim 1, **Sumida** teaches a gear-driving-system designing system (Fig. 9; Fig. 59; Fig. 74; Page 1, Para 0001; Fig. 61; Fig. 89; Page 51, Para 0973), the gear-driving-system designing system comprising:

a setting section for setting one or more gear characteristic values for the gear driving system,(Fig. 59; Fig. 61; Fig. 89); the gear characteristic value indicating characteristics of a final gear and a driving gear in a gear driving system and required for simulation of an oscillation in the final gear of the gear driving system (Fig. 54; Fig. 61; Page 51, Para 0973);

a calculating section for simulating an oscillation in a final gear of the gear driving system, based on the gear characteristic value set in the setting section (Fig. 61; Fig. 61B; Fig. 62; Fig. 93, step S4; Page 51, Para 0973).

Sumida does not expressly teach a judging section for judging whether or not the oscillation in the final gear determined by the simulation in the calculating section is within an acceptable range; and judging when the oscillation in the final gear does not fall within the acceptable range. **Koide** teaches a judging section for judging whether or not the oscillation in the final gear determined by the simulation in the calculating section is within an acceptable range; and judging when the oscillation in the final gear does not fall within the acceptable range (Fig 29; Page 3, Para 0048; Page 12, Para 0184). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the system of **Sumida** with the system of **Koide** that included a judging section for judging whether or not the oscillation in the final gear determined by the simulation in the calculating section is within an acceptable range; and judging when the oscillation in the final gear does not fall within the acceptable range, because that would allow using a gear train configuration that reduced oscillations in the transmission system (Page 1, Para 0012; Page 2, Para 0017).

Sumida and **Koide** do not expressly teach a setting changing section for changing the gear characteristic value set in the setting section. **Hsi Lin et al.** teaches a setting changing section for changing the gear characteristic value set in the setting section (Page 3, L12-16; Page 4, L9-16). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the system of **Sumida** and **Koide** with the system of **Hsi Lin et**

al. that included a setting changing section for changing the gear characteristic value set in the setting section, because that would allow the gear designer to choose optimum values of gear parameters when designing a gear train system for minimum oscillations (Page 3, L13-16).

10.2 As per Claim 4, it is rejected based on the same reasoning as Claim 1, supra. Claim 4 is a computer program claim reciting the same limitations as Claim 1, as taught throughout by **Sumida, Koide** and **Hsi Lin et al.**

10.3 As per claim 7, **Sumida** teaches a method for designing a gear driving system (Fig. 9; Fig. 59; Fig. 74; Page 1, Para 0001; Fig. 61; Fig. 89; Page 51, Para 0973), the gear-driving-system designing method comprising:

a setting step of setting one or more gear characteristic values for the gear driving system,(Fig. 59; Fig. 61; Fig. 89); the gear characteristic value indicating characteristics of a final gear and a driving gear in a gear driving system and required for simulation of an oscillation in the final gear of the gear driving system (Fig. 54; Fig. 61; Page 51, Para 0973);

a calculating step of simulating an oscillation in the final gear of the gear driving system, based on the one or more gear characteristic values being set (Fig. 61; Fig. 61B; Fig. 62; Fig. 93, step S4; Page 51, Para 0973); and

outputting the one or more gear characteristic values corresponding to the simulated oscillation be judged as optimum gear characteristic values (Fig. 62; Fig. 74; Fig. 59; Fig. 61; Fig. 57; Page 51, Para 0974 and Para 0975).

Sumida does not expressly teach a judging step of judging whether or not the simulated oscillation in the final gear is determined to be within an acceptable range; judging when the oscillation in the final gear does not fall within the acceptable range; and when the simulated oscillation in the final gear being judged, is judged to fall within the acceptable range. **Koide** teaches a judging step of judging whether or not the simulated oscillation in the final gear is determined to be within an acceptable range; judging when the oscillation in the final gear does not fall within the acceptable range; and when the simulated oscillation in the final gear being judged, is judged to fall within the acceptable range (Fig 29; Page 3, Para 0048; Page 12, Para 0184).

Sumida and **Koide** do not expressly teach a setting changing step of changing and resetting any one or more of the one or more the gear characteristic values previously set; wherein the setting changing step, the calculating step, and the judging step being repeated. **Hsi Lin et al.** teaches a setting changing step of changing and resetting any one or more of the one or more the gear characteristic values previously set (Page 3, L12-16; Page 4, L9-16); wherein the setting changing step, the calculating step, and the judging step being repeated (Page 3, L12-16; Page 4, L9-16).

10.4 As per claim 10, **Sumida, Koide** and **Hsi Lin et al.** teach the gear-driving-system designing system as set forth in claim 1. **Sumida** teaches the setting changing section also causes the calculating section to simulate another oscillation in a final gear of the gear driving system, based on the changed one or more gear characteristic values set in the setting section by

the setting change section (Fig. 61; Fig. 61B; Fig. 62; Fig. 93, step S4; Page 51, Para 0973; Fig. 5, recursive method).

Sumida and **Koide** do not expressly teach when the setting changing section causes the changing of any gear characteristic values previously set in the setting section; the setting changing section changes any one or more of the previously changed gear characteristic values previously set in the setting section. **Hsi Lin et al.** teaches when the setting changing section causes the changing of any gear characteristic values previously set in the setting section; the setting changing section changes any one or more of the previously changed gear characteristic values previously set in the setting section (Page 3, L12-16; Page 4, L9-16).

Sumida and **Hsi Lin et al.** do not expressly teach that the judging section judges whether or not the another simulated oscillation in the final gear as determined by the calculating section is within an acceptable range; and when the judging section judges that the oscillation in the final gear does not fall within the acceptable range. **Koide** teaches a judging step of judging whether or not the simulated oscillation in the final gear is determined to be within an acceptable range; and when the judging section judges that the oscillation in the final gear does not fall within the acceptable range (Fig 29; Page 3, Para 0048; Page 12, Para 0184).

10.5 As per claim 11, **Sumida, Koide** and **Hsi Lin et al.** teach the gear-driving-system designing system as set forth in claim 10. **Sumida** teaches an output unit that outputs the one or more gear characteristic values as set in the setting section or the one or more changed gear characteristic values (Fig. 62; Fig. 74; Fig. 59; Fig. 61; Fig. 57; Page 51, Para 0974 and Para 0975).

Sumida does not expressly teach when the judging section determines that the simulated oscillation is within the acceptable range or when the judging section determines that the another simulated oscillation is within the acceptable range. **Koide** teaches when the judging section determines that the simulated oscillation is within the acceptable range or when the judging section determines that the another simulated oscillation is within the acceptable range (Fig 29; Page 3, Para 0048; Page 12, Para 0184).

10.6 As per claim 12, **Sumida, Koide** and **Hsi Lin et al.** teach the gear-driving-system designing system as set forth in claim 1. **Sumida** teaches that a plurality of gear characteristic values are set by the setting section for the gear driving system (Fig. 59; Fig. 61; Fig. 89; Fig. 54; Page 51, Para 0973)

10.7 As per Claim 13, it is rejected based on the same reasoning as Claim 1, supra. Claim 13 is a computer program claim wherin program is stored in one of a static storage medium, a dynamic storage medium or a storage area of a computer system reciting the same limitations as Claim 1, as taught throughout by **Sumida, Koide** and **Hsi Lin et al.**

10.8 As per claim 16, **Sumida, Koide** and **Hsi Lin et al.** teach the program as set forth in claim 13. **Sumida** teaches causing the simulating to be repeated so as to simulate another oscillation in a final gear of the gear driving system, based on the changed one or more gear

characteristic values (Fig. 61; Fig. 61B; Fig. 62; Fig. 93, step S4; Page 51, Para 0973; Fig. 5, recursive method).

Sumida and **Hsi Lin et al.** do not expressly teach causing the judging to be repeated so as to judge whether or not the simulated oscillation in the final gear is within an acceptable range; and the case where it is judged that the another simulated oscillation is not within the acceptable range. **Koide** teaches causing the judging to be repeated so as to judge whether or not the simulated oscillation in the final gear is within an acceptable range; and the case where it is judged that the another simulated oscillation is not within the acceptable range (Fig 29; Page 3, Para 0048; Page 12, Para 0184).

Sumida and **Koide** do not expressly teach changing any one or more of the one or more changed gear characteristic values. **Hsi Lin et al.** teaches changing any one or more of the one or more changed gear characteristic values (Page 3, L12-16; Page 4, L9-16).

10.9 As per claim 17, **Sumida, Koide** and **Hsi Lin et al.** teach the program as set forth in claim 13. **Sumida** teaches providing an output of the one or more gear characteristic values on which the simulated oscillation was based (Fig. 62; Fig. 74; Fig. 59; Fig. 61; Fig. 57; Page 51, Para 0974 and Para 0975).

Sumida and **Hsi Lin et al.** do not expressly teach the case where it is judged that the simulated oscillation is within the acceptable range. **Koide** teaches the case where it is judged that the simulated oscillation is within the acceptable range (Fig 29; Page 3, Para 0048; Page 12, Para 0184).

10.10 As per Claim 21, it is rejected based on the same reasoning as Claim 7, supra. Claim 21 is a computer program claim reciting the same limitations as Claim 7, as taught throughout by **Sumida, Koide** and **Hsi Lin et al.**

10.11 As per claim 22, **Sumida, Koide** and **Hsi Lin et al.** teach the gear-driving-system designing system as set forth in claim 1. **Sumida** and **Koide** do not expressly teach that the gear characteristic value includes at least one of (i) the number of teeth, (ii) module, (iii) twist angle, (iv) pressure angle, and (v) tooth width of each of the final gear and the driving gear of the final gear. **Hsi Lin et al.** teaches that the gear characteristic value includes at least one of (i) the number of teeth (Page 25, L19); (ii) module (Page 13); (iii) twist angle (Page 7, L11 and L15); (iv) pressure angle (Page 6, ø) and (v) tooth width (Page 3, L12-16; Page 14, L14-16; Page 15, L1-3) of each of the final gear and the driving gear of the final gear.

10.10 As per Claims 23 and 24, these are rejected based on the same reasoning as Claim 22, supra. Claims 23 and 24 are computer program and method claims reciting the same limitations as Claim 22, as taught throughout by **Sumida, Koide** and **Hsi Lin et al.**

10.11 As per Claim 25, it is rejected based on the same reasoning as Claim 4, supra. Claim 25 is a computer-readable recording medium reciting the same limitations as Claim 4, as taught throughout by **Sumida, Koide** and **Hsi Lin et al.**

Response to Arguments

11. Applicant's arguments with respect to 35 USC 103 (a) rejections filed on September 21, 2006 have been considered. Applicant's arguments with respect to claim rejections under 35 USC 102(e) are moot in view of extensive amendments to the claims, requiring new art rejections.

11.1 As per the Applicant's arguments that "Koide never recites that simulation of an oscillation is carried out based on a gear characteristic value of a gear pair of a final gear and a driving gear of the final gear, and that the gear characteristic value is changed according to the result of the simulation; Koide does not describe/disclose that a gear driving system in which oscillation is suppressed can be designed by setting and changing the characteristic value of the gear pair of the final gear and the driving gear of the final gear; it is hardly possible for one based on the disclosures in Koide to conceive of the present invention; Koide does not anywhere disclose a system for designing a gear driving system; Koide describes and teaches techniques for handling an eccentric drive roller for an image forming apparatus having an endless belt; Koide describes a different procedure and mechanism for reducing oscillations ascribable to the transmission mechanism", the Examiner has used a new references **Sumida** and **Hsi Lin et al.** in addition to **Koide** against the amended claims.

Sumida teaches simulating an oscillation in a final gear of the gear driving system, based on the gear characteristic value set in the setting section (Fig. 61; Fig. 61B; Fig. 62; Fig. 93, step S4; Page 51, Para 0973).

Hsi Lin et al. teaches that the gear characteristic value is changed according to the result of the simulation; and that a gear driving system in which oscillation is suppressed can be designed by setting and changing the characteristic value of the gear pair of the final gear and the driving gear of the final gear (Page 3, L12-16; Page 4, L9-16; Pages 34-48;).

11.2 As per the Applicant's arguments that "Koide does not discuss a system in which gear characteristics values of a gearing driving system are established; the equation that is derived is not an equation that simulates oscillatory movement of roller based on the gear driving characteristics but rather relates angular velocity of a roller having an eccentricity with the velocity of the moving belt; the disclosure in Koide does not correspond to the claimed setting section or claimed calculating section; the discussion in Koide is not directed to reducing an oscillatory movement to an acceptable level; there is no discussion of judging of a simulated oscillation of the final gear as determined by the calculating section based on the gear characteristics of the gear driving system; it is not directed to changing a gear characteristics value that was initially set, when it is determined by the judging section that the simulated oscillation is not within an acceptable range; Koide does not describe a system that is configured to design a gear driving systems so as to optimize the gear characteristics of the gear driving system by initially setting the gear characteristic value of the components of the gear driving system, simulating an oscillation of the final gear of a so configured gear driving system and

determining if the oscillation in the final gear is within an acceptable range; Koike also does not describe that if it is not within an acceptable range, then the system causes one or more of the set gear characteristic values to be changed or reset; there is no disclosure of a method for designing a gear driving system by simulating an oscillation of the final gear based on a gear characteristic values(s) initially set for the gear driving system and judging from such a simulated oscillation if the oscillation is within an acceptable range; there also is no disclosure that if it is determined from such judging that the oscillation corresponding to the set gear characteristic values(s) of the gear driving system is not within the acceptable range, to change or rest one or more of these set gear characteristic values(s) of the gear driving system and repeating the simulating, judging and changing process until the oscillation corresponding to the gear characteristic values(s) being evaluated is within the acceptable range", the Examiner has used a new references **Sumida** and **Hsi Lin et al.** in addition to **Koide** against the amended claims.

Sumida teaches a gear-driving-system designing system (Fig. 9; Fig. 59; Fig. 74; Page 1, Para 0001; Fig. 61; Fig. 89; Page 51, Para 0973), the gear-driving-system designing system comprising:

a setting section for setting one or more gear characteristic values for the gear driving system,(Fig. 59; Fig. 61; Fig. 89); the gear characteristic value indicating characteristics of a final gear and a driving gear in a gear driving system and required for simulation of an oscillation in the final gear of the gear driving system (Fig. 54; Fig. 61; Page 51, Para 0973);

a calculating section for simulating an oscillation in a final gear of the gear driving system, based on the gear characteristic value set in the setting section (Fig. 61; Fig. 61B; Fig. 62; Fig. 93, step S4; Page 51, Para 0973).

Koide teaches a judging section for judging whether or not the oscillation in the final gear determined by the simulation in the calculating section is within an acceptable range; and judging when the oscillation in the final gear does not fall within the acceptable range (Fig 29; Page 3, Para 0048; Page 12, Para 0184).

Hsi Lin et al. teaches a setting changing section for changing the gear characteristic value set in the setting section (Page 3, L12-16; Page 4, L9-16).

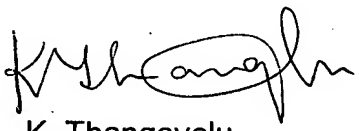
Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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